Inventions & Innovation Project Abstract

Maximus™ Sonic Stop-Fill Device for LP Gas and Anhydrous Ammonia Tanks

About 2.0 trillion Btus of valuable energy are currently being wasted each year due to outdated practices used in the LP Gas and anhydrous ammonia industries. Until now, no technology has been available for use in these industries to replace the wasteful "outage gauge."

Outage gauges (also known as "fixed liquid level gauges" or "spitter valves") are used to prevent overfilling LP Gas and anhydrous ammonia tanks. An outage gauge consists of a tube that pierces the shell of the tank, with its lower end positioned at the maximum fill level inside the tank. For the entire duration of the refill, the outage gauge valve is left open and LP Gas or anhydrous ammonia is released. The maximum fill level is noted when a white cloud of vapor sprays out, indicating it is time to stop filling. This practice is outdated, dangerous, environmentally unfriendly, and extremely wasteful.

In contrast, Adept Science & Technologies, LLC is developing the Maximus™ stop-fill technology, which relies on an advanced proprietary acoustic method to detect the presence of either liquid or gas non-invasively at a specific point on a tank. As the liquid level rises, the acoustic signal received by the sensor changes, indicating the presence of liquid on the other side of the tank wall. The Maximus™ thereby achieves the exact same end as an outage gauge, without the wasted energy and environmental pollution.

The Maximus™ instrument enables significant energy savings for the LP Gas and anhydrous ammonia industries. By drastically reducing the amount of Btus wasted each year, the Maximus™ instrument will help decrease America's dependence on foreign energy sources, increase the energy efficiency of industry, and support EERE in its mission.

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